CLAIMS

1. A tube of zirconium-base alloy for constituting all or the outside portion of cladding for a nuclear fuel rod or of a guide tube for a nuclear fuel assembly, made of a zirconium-base alloy containing, by weight, 0.8% to 1.8% niobium, 0.2% to 0.6% tin, and 0.02% to 0.4% iron, plus inevitable impurities, and having a carbon content controlled to lie in the range 30 ppm to 180 ppm, a silicon content in the range 10 ppm to 120 ppm, and an oxygen content in the range 600 ppm to 1800 ppm.

2. A tube according to claim 1, wherein the alloy is in recrystallized state.

3. A tube according to claim 1, wherein the alloy is in relaxed state.

4. A tube according to claim 1, ~~2, or 3~~, wherein the alloy has set contents: 0.9% to 1.1% niobium, 0.25% to 0.35% tin, and 0.2% to 0.3% iron.

5. A method of manufacturing a tube according to claim 1, including the following steps of:

- making a bar of an alloy containing 0.8% to 1.8% niobium, 0.2% to 0.6% tin, and 0.02% to 0.4% iron;
- after heating in the bar to a temperature in the range 1000°C to 1200°C, quenching the bar in water,
- drawing the bar into a blank after heating to a temperature in the range 600°C to 800°C;
- annealing the drawn blank at a temperature in the range 590°C to 650°C; and
- cold rolling the annealed blank in at least four passes into a tube, with intermediate heat treatments at temperatures in the range 560°C to 620°C.

6. A method according to claim 5, wherein the rolling passes are performed on tubes having increasing recrystallization ratios.

7. A method according to claim 5 ~~or 6~~, further including a recrystallizing final heat treatment step at a temperature in the range 560°C to 620°C.

8. A method according to claim 5 ~~or 6~~, further including a strain relieving final heat treatment step at a temperature in the range from about 470°C to 500°C.